Cruise Instructions

Date Submitted: August 12, 2010

Platform: NOAA Ship *Okeanos Explorer*

Cruise Number: EX1005

Project Title: Guam to Hawaii Transit

Cruise Dates: 8/23/10 – 9/5/10

Prepared by: Meme Lobecker

Approved by: _____ Date: Aug-16, 2010
John McDonough, Acting Director
NOAA Office of Exploration and Research

Approved by: _____ Date: _____
Captain Michael S. Devany, NOAA
Commanding Officer
Marine Operations Center - Atlantic

Introduction

EX1005 is a transit cruise between Guam and Hawaii. The ship will be returning from the INDEX-SATAL 2010 mission in Bitung, North Sulawesi, Indonesia. The cruise will consist of 24-hour mapping with the EM302 multibeam sonar, and will also include a survey of opportunity conducted by the National Marine Fisheries Service (NMFS). The survey of opportunity will include running a Continuous Plankton Recorder (CPR) during the entire two week transit. When possible, the ship will transit a route parallel and offset 5 to 10 kilometers to the route it took in April 2010 (EX1003, Hawaii to Guam) to maximize mapping efficiency and continuity of areas explored.

I. Overview

a. Cruise Period

This cruise plan covers the transit of *Okeanos Explorer* from Guam to Hawaii from August 23 – September 5, 2010 (EX1005).

b. Operating Area

The operating area of the cruise is the Pacific Ocean between Guam and Hawaii. Similar to its transit route from Hawaii to Guam in April 2010, the ship will take approximately the great circle route to complete the transit.

Location	Longitude (E)	Latitude (N)
Guam	144° 46’ 59’’	13° 28’ 0’’
Honolulu, HI	157° 51’ 29’’	21° 18’ 24’’

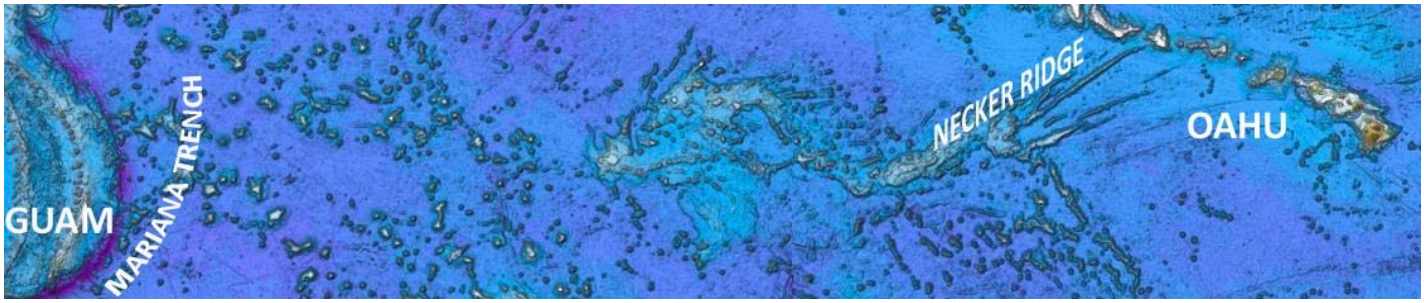

Figure 1. Graphic showing transit from Guam to Hawaii. Bathymetry from Sandwell and Smith, shown in Fledermaus. Not for navigation.

c. Summary of Objectives

The main objective of the cruise is to transit in a safe and timely manner between Guam and Oahu. During the transit, multibeam data will be collected 24 hours a day. XBT casts will be collected every 6 hours. All data will be fully processed according to normal onboard mapping procedures, and will be archived with the National Geophysical Data Center.

A survey of opportunity will also be conducted in conjunction with the NMFS Office of the Assistant Administrator. A survey of opportunity is a small, exploratory expedition that takes advantage of the schedules of ocean-going research vessels by maximizing use of ship's time. In circumstances where individuals cannot serve on a survey of opportunity, OER ensures that acquired data and any other pertinent information are transferred to the appropriate researchers after the expedition. During EX1005, the Okeanos Explorer will tow a continuous plankton recorder (CPR), which is a device that can be towed for long distances with minimal maintenance. [http://www.sahfos.ac.uk/about-us/cpr-survey/the-cpr-survey.aspx].The equipment collects phytoplankton and zooplankton samples, which will be used to describe species composition and evaluate diversity gradients. Opportunities to collect CPR data for such long distances as the EX1005 transit are rare, and is expected to provide valuable information to NMFS. The data will allow NMFS to generate reasonable estimates of species occurrence at the sea surface (~10m), and will be used for the CAMEO: Trans-Pacific Plankton Comparison 2001 project. A full description of the project is included in Appendix A.

NOTE: Although the Survey of Opportunity form in Appendix A includes a request for telepresence enabled outreach, this will not be part of the planned operation due to funding and staffing constraints.

Tow arrangements: CPR will be towed using mooring line tackle (i.e. capstan, bitts, and chalk)

The CPR works by filtering plankton from the water over long distances (up to 500 nautical miles) on a moving filter band of silk (270 micron mesh size). The filter silk band is wound through the CPR on rollers turned by gears, which are powered by an impeller.

The internal mechanism is a self-contained cartridge that is loaded with the filtering silk at the laboratory and placed inside the CPR prior to deployment. On return to the laboratory, the silk is removed from the mechanism and divided into samples (known as blocks) representing 10 nautical miles of towing. The plankton on these samples are then analyzed according to standard procedures.

Storage and Disposition of collected samples: Lora Clarke from NMFS in Silver Spring, a fishery biologist, will be the sailing as the CPR technician. She will be making the arrangements for storage of the samples and to ship the samples

d. Participating Institutions

National Oceanic and Atmospheric Administration
Office of Ocean Exploration and Research (OER)
1315 East-West Hwy, Silver Spring, Maryland 20910

University of New Hampshire (UNH)
Center for Coastal and Ocean Mapping (CCOM)
24 Colovos Road, Durham, NH 03824 USA

National Marine Fisheries Service (NMFS), Office of Assistant Administrator
1315 East West Highway
Silver Spring, MD 20910

Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Pacific Islands Fisheries Science Center
Dole Street Office
2570 Dole Street
Honolulu, HI 96822-2396

e. Personnel

A full mapping compliment is necessary for this cruise, which requires two watchstanders at a time. One senior survey technician will be onboard to cover one 8 hour watch per day and to perform the duties of the mapping lead. There are two options to staff the remaining watches. First, five additional personnel are required if all are to stand 8 hour watches. Alternatively, four additional personnel are required if all except the senior survey technician stand 12 hour watches. Senior survey technicians only stand 8 hour watches on the Okeanos Explorer. For this cruise, the first mapping staffing option described above will be pursued.

Lora Clark of NMFS will be onboard to monitor the CPR. The deck crew will aid with bringing in the equipment. Approximately twice during the cruise the equipment will be recovered and internal mechanisms will be switched.

Ben LaCoure is a potential candidate to become the next Ops Officer onboard in 2011. Ben briefly visited the ship in Hawaii in the spring. This cruise will be his first time onboard while the Okeanos Explorer is at sea.

Name	Affiliation	Role	M/F	Citizenship
TBD		Expedition Coordinator		
Colleen Peters	NOAA OMAO	Mapping Lead/MB Watchstander 1	F	US
Lilian Stuart	NOAA Augmenter	MB Watchstander 2	F	US

	or OER			
Megan Nadeau	NOAA OER	MB Watchstander3	F	US
Shannon Hoy	NOAA	MB Watchstander 4	F	US
Brian Shiro	NOAA	MB Watchstander 5	M	US
Jack Payette	UCAR	MB Watchstander 6	M	US
Lora Clark	NMFS	CPR Equipment	F	US
Ben LaCoure	NOAA OMAO		M	US

f. Administrative

Key Points of Contact

Ship Operations

Marine Operations Center, Atlantic (MOA)
439 West York Street
Norfolk, VA 23510-1145
Telephone: (757) 441-6776
Fax: (757) 441-6495

Chief, Operations Division, Atlantic (MOA1)
CDR Keith Roberts
Telephone: 757-441-6842
E-mail: ChiefOps.MOA@noaa.gov

Marine Operations Center, Pacific (MOP)
1801 Fairview Avenue East
Seattle, WA 98102-3767
Telephone: (206) 553-4548
Fax: (206) 553-1109

Chief, Operations Division, Pacific (MOP1)
CDR Mike Francisco
Telephone: 206-553-8705
Email: ChiefOps.MOP@noaa.gov

Mission Operations

Mashkoor Malik, Mapping Lead
NOAA Ocean Exploration & Research (ERT, Inc.)
Phone: 603-862-4332/ 603-377-6319
E-mail: mashkoor.malik@noaa.gov

CDR Joe Pica, NOAA
Commanding Officer
NOAA Ship *Okeanos Explorer*
Phone: 401-378-8284
Email: CO.Explorer@noaa.gov

LT Nicola VerPlanck, Field Operations Officer
NOAA Ship *Okeanos Explorer*
Phone: 321-960-3726
E-mail: OPS.Explorer@noaa.gov

Meme Lobecker, Mapping Lead
NOAA Office of Ocean Exploration and Research (ERT ,Inc.)
Phone: 401.662.9297
Email: Elizabeth.lobecker@noaa.gov

Other Mission Contacts

Craig Russell, EX Program Manager

John McDonough, Deputy Director

NOAA Ocean Exploration & Research
Phone: 206-526-2803 / 206-518-1068
E-mail: Craig.Russell@noaa.gov

NOAA Ocean Exploration & Research
Phone: 301-734-1023 / 240-676-5206
E-mail: John.McDonough@noaa.gov

Catalina Martinez, Regional Manager
NOAA Ocean Exploration & Research
Phone: 401-874-6250 (o)/ 401-330-9662 (c)
Email: Catalina.martinez@noaa.gov

Webb Pinner, Systems Engineer
NOAA Ocean Exploration & Research (2020, Inc.)
Phone: 401-749-9322
Email: webb.pinner@noaa.gov

g. Diplomatic Clearances

NOT APPLICABLE TO THIS CRUISE

h. Licenses and Permits

NOT APPLICABLE TO THIS CRUISE

II. Operations

a. Cruise Plan Itinerary

The cruise consists of 14 days transit from Guam to Hawaii. Operations will focus on safe transit, multibeam mapping operations, and CPR towing operations.

b. Activity Table

Dates	Location	Activity	Data
8/23/10	Guam	Depart Guam for Hawaii	
8/23/10 – 9/5/10	Pacific Ocean between approx. 13.3°N to 21°N and 144.66°E to 157°W	Multibeam data acquisition and processing, including XBT operations	Raw EM302 multibeam, processed xyz, geotiff, Fledermaus SD objects
8/23/10 – 9/5/10	Pacific Ocean between approx. 13.3°N to 21°N and 144.66°E to 157°W	Continuous Plankton Recorder (CPR) collection	Biological samples (zooplankton and phytoplankton)
9/5/10	Hawaii	Arrive Pearl Harbor, Oahu	

c. Applicable Restrictions

NOT APPLICABLE TO THIS CRUISE

III. Equipment

a. Equipment and capabilities provided by the ship

- Kongsberg EM302 Multibeam Echosounder (MBES)
- Kongsberg EA600 Deepwater Echosounder
- LHM Sippican XBT (various probes)
- Seabird SBE 911 Plus CTD
- Seabird SBE 32 Carousel and 24 2.5 Niskin bottles
- Seabird SBE-45 (Micro TSG)
- CNAV GPS
- POS/MV v.4
- Kongsberg Dynamic Positioning-1 System
- NetApp mapping storage system
- CARIS HIPS v.6.1 software
- Hypack 2009a software
- Scientific Computing System (SCS)
- ECDIS
- Met/Wx Sensor Package
- Labconco Fume Hood

b. Equipment and capabilities provided by the scientists

- Continuous Plankton Recorder (CPR) and associated consumables
- The CPR will be hauled out every 500 miles to switch the internal mechanism and collected samples. After initial deployment, the CPR will be hauled out after 250 miles to check calibration. After each re-deployment, the CPR will be hauled out after 100 miles to ensure it is operating smoothly.
- All samples will be processed post-cruise. In the wet lab, the procedure will be to simply remove the silk from the CPR internal mechanism, roll it, and place it in a jar with 250-300ml of 10% formalin (provided by the ship). Post-cruise, samples will be hand carried to the nearest NMFS Science Center (Seattle, La Jolla, or Honolulu). Formalin will not be shipped.
- Samples do not require any specific temperature for storage. Room temperature is preferable. Samples will be stored in fire safe storage cabinet.

IV. Hazardous Materials

a. Policy and Compliance

The Expedition Coordinator is responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Expedition Coordinator.

b. Radioactive Isotopes

NOT APPLICABLE TO THIS CRUISE

(Each scientist working with these materials will be required to wear a lab coat and disposable booties to reduce the likelihood of tracking the substance out of the specified working area.

It will be the responsibility of the investigator to conduct pre-cruise (for background) and post-cruise wipe tests (regardless of whether a spill occurred or not). Wipe tests should also be conducted in the event of a spill, as well as periodically while underway.

A detailed procedural methodology describing the use of these materials should be provided to the Environmental Compliance Officer (ECO) for review at least one month prior to bringing them aboard. A spill contingency plan should also be provided at the same time. Please note that ship's personnel are not first responders in the event of a spill.

A log detailing the type and amount of materials brought aboard and removed from of the ship shall be maintained, along with a record of any spills that occurred.

All radioisotope work will be conducted by NRC or State licensed investigators only, and copies of these licenses shall be provided to the ECO at least one month prior to bringing any materials on board.)

c. Inventory

Eight (8) one (1) gallon jugs of formalin are available onboard. MSDS sheets are on file on board in the wet lab.

V. Additional Projects

a. Supplementary ("Piggyback") Projects

See discussion of survey of opportunity in section 1c, and Appendix A.

b. NOAA Fleet Ancillary Projects

NOT APPLICABLE FOR THIS CRUISE

VI. Disposition of Data and Reports

a. Data and Responsibilities

All data acquired on EX will be provided to the public archives without proprietary rights. All data management activities shall be executed in accordance with NAO 212-15, MANAGEMENT OF ENVIRONMENTAL AND GEOSPATIAL DATA AND INFORMATION [http://www.corporateservices.noaa.gov/ames/NAOs/Chap_212/naos_212_15.html].

Ship Responsibilities

The Commanding Officer is responsible for all data collected for missions until those data have been transferred to mission party designees. Data transfers will be documented on NOAA Form 61-29. Reporting and sending copies of project data to NESDIS (ROSCOP form) is the responsibility of OER.

NOAA OER Responsibilities

The Expedition Coordinator will work with the EX Operations Officer to ensure data pipeline protocols are followed for final archive of all data acquired on EX without proprietary rights.

Deliverables

a. At sea
   - Daily plans of the Day (POD)
   - Daily situation reports (SITREPS)

b. Post cruise
   - Refined SOPs for all pertinent operational activities
   - Assessments of all activities

c. Science
   - CTD data and multibeam data from CTD cast locations on CDs
   - All samples will be processed post-cruise at the Sea Fisheries Institute Plankton Sorting and Identification Center in Szczecin, Poland and will ultimately be stored there. At the discretion of the PI for the project, they can be returned to the United States. Data will be made publically available via the Biological and Chemical Oceanography Data Management Office (www.bco-dmo.org).

Archive

- The Program and ship will work together to ensure documentation and stewardship of acquired data sets in accordance with NAO 212-15. The Cruise Information Management System is the primary tool used to accomplish this activity.
- OER and the ship will work together to ensure documentation and stewardship of acquired datasets in accordance with NAO 212-15. The Cruise Information Management System (CIMS) is the primary tool to accomplish this activity.

b. Pre and Post Meetings

Pre Cruise Meeting

Prior to departure, the Expedition Coordinator will conduct a meeting of the scientific party to inform them of cruise objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post Cruise Meeting

Upon completion of the cruise, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Expedition Coordinator and members

of the scientific party to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed.

Shipboard Meeting

Daily Operations Briefing meetings will be held at 1530 in the forward lounge to review the current day, and define operations, associated requirements and staffing needs for the following day. A Plan of the Day (POD) will be posted each evening for the next day in specified locations throughout the ship. A safety brief and overview of POD will occur on the Bridge each morning at 0800. Daily Situation Reports (SITREPS) will be posted as well and shared daily through e-mail and/or the EX PLONE site (http://tethys.gso.uri.edu/OkeanosExplorerPortal).

c. Ship Operation Evaluation Report

Within seven days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the Expedition Coordinator. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfation@noaa.gov. If email is not an option, a hard copy may be forwarded to: Director, NOAA Marine and Aviation Operations NOAA Office of Marine and Aviation Operations 8403 Colesville Road, Suite 500 Silver Spring, MD 20910

VII. Physical Security – Risk Management

a. Natural Disaster Mitigation Plan

See ship's security plan for details.

Piracy/Terrorism Mitigation See ship's security plan for details.

VIII. Miscellaneous

a. Meals and Berthing

Meals and berthing are required for 7 visitors, including 5 mapping personnel, 1 scientist, and Ben LaCoure. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the cruise, and ending two hours after the termination of the cruise. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey (e.g., Expedition Coordinator is allergic to fin fish).

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Expedition Coordinator. The Expedition Coordinator and Operations Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Expedition Coordinator is responsible for ensuring the visiting personnel berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Expedition

Coordinator is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the cruise and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Expedition Coordinator will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Expedition Coordinator to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

b. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 08/08) must be completed in advance by each mission participant. The NHSQ can be obtained from the Expedition Coordinator or the NOAA website at NOAA HEALTH SERVICES QUESTIONNAIRE. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. Clearances are valid for 2 years for personnel under age 50 and 1 year for age 50 and over. All PPD's expire after one year from the date of administration. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757.441.6320
Fax 757.441.3760
E-mail: MOA.Health.Services@noaa.gov

Prior to departure, the Expedition Coordinator must provide a listing of emergency contacts to the Operations Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number.

c. Shipboard Safety

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide

steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required. Personnel should bring their own foul weather gear.

Operational Risk Management: For every operation to be conducted aboard the ship (NOAA-wide initiative), risk management procedures will be followed. For each operation, risks will be identified and assessed for probability and severity. Risk mitigation strategies / measures will be investigated and implemented where possible. After mitigation, the residual risk will have to be assessed to make Go-No Go decisions for the operations. Particularly with new operations, risk assessment will be ongoing and updated as necessary. This applies to over-the-side operations and everyday tasks aboard the vessel that pose risk to personnel and property.

- CTD, ROV, VSAT (and other pertinent) ORM documents will be followed by all personnel working on board the EX.

- All personnel on board are in the position of calling a halt to operations/activities in the event of a safety concern.

d. Communications

Specific information on how to contact the NOAA Ship *Okeanos Explorer* and all other fleet vessels can be found at: http://www.moc.noaa.gov/phone.htm

Important Telephone and Facsimile Numbers and E-mail Addresses

Ocean Exploration and Research (OER):

OER Program Administration:
Phone: (301) 734-1010
Fax: (301) 713-4252
E-mail: Firstname.Lastname@noaa.gov

University of New Hampshire, Center for Coastal and Ocean Mapping

Phone: (603) 862-3438
Fax: (603) 862-0839

NOAA Ship *Okeanos Explorer* - Telephone methods listed in order of increasing expense:

EX Cellular:
OOD (401) 378-7414

EX Iridium:
(808) 659-9179

EX INMARSAT B

Line 1: 011-872-764-852-328
Line 2: 011-872-764-852-329

Voice Over IP (VoIP) Phone:
301-713-7772 (expect a delay once picked up by directory)

Mission personnel may obtain access to these systems with permission from the Commanding Officer on a cost-reimbursable basis.

E-Mail: Ops.Explorer@noaa.gov (mention the person's name in SUBJECT field)

expeditioncoordinator.explorer@noaa.gov
For dissemination of all hands emails by Expedition Coordinator while on board. See ET for password.

a. IT Security

Any computer that will be hooked into the ship's network must comply with the NMAO Fleet IT Security Policy prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

1. Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.

2. Installation of the latest critical operating system security patches.

3. No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is preferable.
Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

b. Foreign National Guests Access for OMAO Facilities and Platforms

NOT APPLICABLE TO THIS CRUISE

Appendixes

NMFS Survey of Opportunity Initial Request Form